Art and Mobile Augmentation
The Brave New World of Graphical Tagging

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This paper - based on research for an art-practice based PhD at Duncan of Jordanstone College of Art & Design (University of Dundee) in Scotland - examines current trends in graphical tagging, particularly in art practice where it can be used as a vehicle for exploring conceptual issues such as the ephemerality of the digital medium, de- or re-materialisation of the art object and how artworks can be augmented and viewed in their settings.

What is graphical tagging?

Graphical tags are two-dimensional barcodes which can be read with a mobile phone camera. In most cases a URL is embedded in the tag, which when "scanned" links to a mobile-optimised website. This way, the user can avoid the frustrating task of typing URLs on small keypads to access websites from their phones.

Figure 1: A selection of current graphical tags

A large number of graphical tags are currently in use, the most common being the QR code, where QR stands for *Quick Response*. In this way a machine such as a consumer-end camera phone can read the code quickly and then interpret it via reader software.

In Japan, almost all mobile phones now come with graphical tag readers as standard. Figure 2 shows a restaurant in a small Japanese village (December 2007). Customers scan the graphical tag (highlighted) with their mobile phones to claim a free drink voucher redeemable at the restaurant. Graphical tagging has been implemented in Japan since 2000, and in 2009 has growing audiences in Europe for advertising, tracking parcels, festival ticketing and providing discount e-vouchers.

Figure 2: Narita Village, (2007) S,O'Callaghan

For audiences outside Japan, many phones ship with readers. Companies like Kaywa, I-nigma, Quickmark, and I-matrix create free readers for users to download and install on their phones. In theory, this makes the technology cheap and easy to roll out to large audiences, however adoption of the technology on a global level has been slow. Given the wide variety of tags and readers available, the most prudent business practice would be to gain the largest market share and develop standards which can then be used in collaboration with telecommunications companies. This is the case in Japan with Densowave partnering with NTT DoCoMo and in Australia with Telstra releasing QRious codes which can be accessed for free by Telstra customers.

Unfortunately in the UK, at the time of writing, no such partnerships between telcos and graphical tagging developers exist. Obstacles such as the lack of constant inexpensive mobile internet access persist for users. This has a knock on effect both in terms of hindering artistic development and creating difficult logistics for curators and gallery audiences.

Artists using graphical tagging

The Pet Shop Boys, Banksy, Michele Pred, Pedro Morales and Yuri Suzuki are some artists who are experimenting with graphical tagging, many linking to text on screen or to a url. These are early works in the field, yet to fully exploit the capabilities of mobile 2.0 technologies which – when technical considerations allow – can widen levels of interactivity with personalization and database driven content.

In 2008, the Pet Shop Boys created the music video *Integral* which used animated QR codes. However the codes are displayed so quickly that users are unable to access content behind them from the video. The Pet Shop Boys do invite participation by providing enthusiasts with a PDF of all frames used to animate the codes in the video. This is an interesting way of engaging the public, using a music video as the platform for promotion of the concept, the website for public engagement and then a YouTube group (YouTube, 2008) to publish user-generated content based on their work. This viral approach, although innovative, has not had many responses, with only nine videos (as of June 2009) posted to the group.

The well-known graffiti artist Banksy created a work near Waterloo station, London, which incorporates a QR code linking to an entry about him in Wikipedia. His subversive approach, producing ephemeral works in public places shares many issues with digital artworks, surrounding archiving, “originality” and permanence of a material object. The use of graphical tagging within this adds to those ideas, though in the Waterloo station work he does not explore the functionality or scope provided by the mobile phone to augment his work any further than to provide a “digital signature”. Interestingly, by default, relationships between digital and material artworks and the spaces they are consumed in are raised through Banksy’s own gallery presence in Second Life. The great irony of this is that the works he produces in the physical “real” world are problematic in the gallery space and are sold in-situ by enterprising art dealers, with the ownership and ephemerality issues passed on to the buyer.

In 2007, American artist Michele Pred, in collaboration with Semacode Corp, created a tapestry work of a datamatrix code called *You Are What You Buy*, first exhibited at Los Angeles Art Gallery and selling for $US1800. When the user scans the work with the phone provided, text appears on screen saying: "You are what you buy". Pred states: "[The work is] supposed to make a statement about American consumer culture…. In our society its about what car we drive and what we wear that makes the person" (Walcoff, 2008). Pred draws interesting metaphors with the use of tapestry. The work originally was a print, but she claims that she is aiming at a larger statement through the use of thread by claiming; " We're a part of the fabric of life, and technology is a part of that fabric of life as well".(Walcoff, 2008). The work is reminiscent of Barbra Kruger's *I Shop, Therefore I Am*, however a piece like Pred's has the potential to take these ideas much further with mobile-web interactivity.

Another artist creating textile-based work which incorporates QR codes is Venezuelan Pedro Morales, who has created a series of works called *Puras Flores* (Pure Flowers). Of the series he states:

> "Puras Flores is a digital work whose scale invariability is shaped by QR codes patterns. This fractal characteristic proposes aesthetics marked by ones and zeros, whites and blacks." (Roger, 2008)

Puras Floras is handmade using cloth and leather flowers, so there is a lovely juxtaposition of challenging a digital device to "read" something that is analogue and handmade in nature. Morales has since gone on to experiment with other types of graphical tagging such as Microsoft HCCB colourcodes to create more customized linking and to explore a wider range of aesthetics.

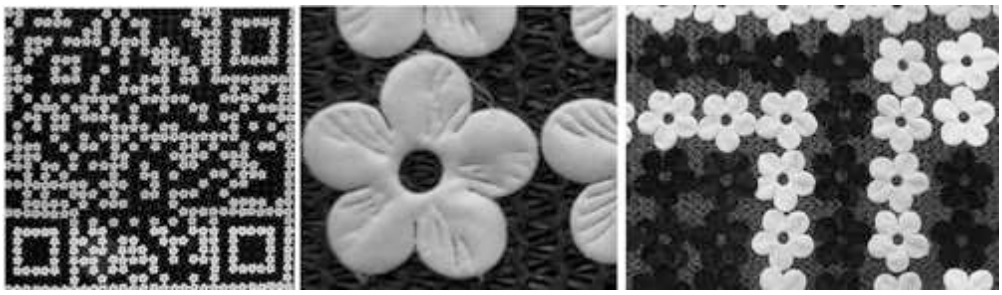

Figure 3: Puras Floras (2008) Pedro Morales, courtesy of the artist

In May 2009 at Futuresonic, artist Yuri Suzuki invited participants to take part in his QR code facilitated work *Graffiti Radio.* Located around the streets of Manchester as part of the festival, Suzuki explores the potentials of the mobile web, using the QR codes to link to internet radio stations. Whilst physically located in the streets of Manchester, the QR codes link to the virtual audio spaces created by online radio.

Studio practice and exhibition: A case study

To gain a deeper understanding of the challenges faced by artists, actually making works oneself often provides the greatest insights. As part of PhD research into graphical tagging as an artform, an invitation from the Hannah Mclure Centre in Dundee to make a series of works embedded with graphical tags for their *Signals in the City* exhibition *(*March - May 2008) was accepted. This became a means of testing the technical aspects of producing works, as well as enabling investigation into how graphical tags facilitate user interaction in a gallery environment. The studio-based process allowed for the identification of technical issues when implementing works in the gallery and is used as a case study in this paper.

Two series of works were created - *RGB: Medium is the Message* comprised of three large-scale screen prints of QR codes which have been altered to appear more organic than standard pixel-based codes. This way the latitude of what the phones could actually read, in terms of distortion of the codes, colour and upscaling were investigated.

Figure 4: RGB: Medium is the Message (2008), S. O'Callaghan

The other series, called *home.html*, was a photographic series of six works, underneath which a QR code was printed in red ink - reminiscent of Japanese prints. The QR codes link to websites about each of the locations that the images were taken in and were printed at small sizes in order to test the effects of small scale and lighting in a gallery environment.

Exhibiting graphically tagged artworks

Initially the works were developed using Nokia N70 phones with i-nigma reader software installed. N70s have a Symbian operating system with a 2MP camera and have a wide latitude in terms of lighting and being able to read the heavily distorted codes of *RGB: Medium is the Message*. Orange provided sponsorship of the exhibition with mobile web access and three Nokia 6300 phones which - according to the i-nigma website (www.i-nigma.com) - were compatible with their software. When installing the exhibition it transpired that this combination of phone and software was unreliable in this particular gallery situation.

A number of variables had to be considered, such as the phone operating system, lens capabilities, responses to lighting conditions, handset software, and the operator's additional branded software. Narrowing this down was difficult, particularly since the 6300s were delivered late to the gallery with little time for testing, so the problems were not fully resolved in time. Given the short lead-time for troubleshooting, in this case the solution was to buy more N70s as backup phones and exhibit with both handsets. This was not ideal, but highlighted the value of testing and retesting the hardware and software, under a variety of conditions, and not just in the studio where the works are made, rather than relying on the manufacturer's advice. Following these experiences, further investigation is currently being undertaken at Duncan of Jordanstone College of Art & Design to identify a range of reliable handsets paired with reader software appropriate for gallery use.

Observations in the gallery

Figure 5: Signals in the City, Private View, 2nd March 2008, S. O'Callaghan

When viewing the works, it was observed that users gravitated towards the newer, more attractive 6300s rather than N70s highlighting the importance of product design and material aspects of objects. A plinth displaying the phones and instructions was located on to the right of the works on the wall. The natural tendency for viewers was to pick up a phone, take it to the nearest artwork and then work their way left along the wall from there.

People viewed the works in the order in which they were hung along the wall, as they would conventional two-dimensional works in a gallery. This is interesting when the nature of the works is actually non-linear and there was no need to do this.

Most people spent a while with the technology if they couldn't work it at first, and many spent more time looking at the online content than had been expected. Such behavior is encouraging for artists, suggesting that gallery audiences are interested in engaging with such works. An audience who hadn't been considered was children, and, surprisingly, they were often the most responsive participants, spending longer engaging with the works than many adults. They also were quicker to experiment with and implement the technology, often helping out their adult companions if they had difficulties.

Graphical tagging as a vehicle for critical investigation

Artists embedding graphical tags in their artworks have the potential to explore relationships between the physical, tactile world and that of virtual, digital media through the notion of *mobile augmentation* (Chan, 2008). Artworks which employ graphical tagging can have a physical presence in the "real" world where the graphical tag is displayed, whilst simultaneously leveraging the interactivity of the mobile medium to augment environments and objects with digital content. This then raises critical questions about materiality and space in relation to an artwork augmented with graphical tagging.

If one goes back to Lucy Lippard's *Dematerialization of the Art Object* and the ideas behind conceptual art of the 1960s where the physical form is secondary to the concepts behind the work (Lippard, 2001), mobile-augmented works raise interesting debates surrounding further dematerialisation of the art object. When digital media was adopted by artists in the 1990s, theorists such as Lev Manovich advocated that even without a material output there still was a "new media object" fulfilling a defined set of criteria (Manovich, 2001: 27 - 48). When one examines the impact of graphically tagging an object which has a material presence and location in time and space, a shift in paradigm occurs, adding to the conceptual landscape of digital media and materiality. The digital content that may be latent within the object, and released through scanning a code, has the potential to mediate co-presence in the viewer, where they are physically in the

space where the object exists, but may also be in the virtual space determined by that content. The object becomes bipartite where it can exhibit material form, yet have undergone a process of dematerialisation through digitisation.

The actual spaces/places in which these art “objects” are being viewed, interacted with, or consumed shape how they are received by their audiences where the semiotics of a given space can affect their experiences. The actual physicality of one’s environement becomes much more important when people interact with the space itself as well as with the artwork. The potentials provided by the graphical tagging of physical art objects means that the boundaries between real and virtual become blurred, through the viewer’s ability to be physically present in one space and virtually present in another, augmented by content on a mobile phone.

Conclusion

The possibilities for imaginative, playful and questioning artworks are many - however graphical tagging is still a nascent and technically fraught tool for artists to work with. The newness of the technology means that there are opportunities for groundbreaking and experimental works in a range of technical, material and conceptual areas, which build on critical debates in contemporary art. The main obstacle facing today’s artists working in this field is the commercial telecommunications industry itself, where there are so many variables to be considered when making such works that artists are often daunted by the prospects of unraveling what is appropriate for their needs. Art practice-based research is currently being undertaken to identify ways in which artists, curators and galleries can circumnavigate these problems. This hopefully will create a path and set standards, which can guide other artists who wish to explore this medium.

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